

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) ~~Method-A method~~ for optically detecting a double feed in an apparatus for processing one or more types of sheet-like objects, ~~particularly banknotes,~~
the method comprising:

~~characterised in that said illuminating the sheet-like objects are illuminated,~~
measuring transmission intensities of light transmitted through sampling
points of a specific sheet-like object of the sheet-like objects;

measuring reflection intensities of light reflected from the sampling points of
the specific sheet-like object;

producing a transmission image of a specific the specific sheet-like object from
the measured transmission intensities of said sheet-like objects is produced by measuring
transmission intensities of light transmitted through regions of said specific object;

producing and a reflection image from the measured is produced by measuring
reflection intensities of light reflected from the said regions of said specific object where said
double feed is detected by

applying a two-dimensional evaluation method, method to detect the double
feed, the two-dimensional evaluation method comprising:

forming a first dimension of said two-dimensional evaluation method
being formed by said from the measured transmission intensities intensities; and

forming a second dimension of said two-dimensional evaluation
method being formed by said from the measured reflection intensities intensities;

~~and wherein the two-dimensional evaluation method further comprises~~
~~determining the location~~ locations of said ~~the~~ sampling points in said ~~two~~ the first and second
~~dimensions, dimensions;~~ and

comparing ~~said the~~ locations with a linear decision boundary.

2. (Currently Amended) The method as claimed in claim 1, further comprising:

~~characterised in that said sheet-like objects are sequentially fed-feeding the~~
~~sheet-like objects into said the apparatus apparatus;~~

~~and conveyed conveying the sheet-like objects~~ along a transport path in a
moving ~~direction direction;~~

~~where first determining~~ a position and an angle of a specific sheet-like object
with respect to ~~said the~~ transport path ~~are determined and where second said,~~

~~wherein the~~ specific sheet-like object passes a multitude of sensor cells
arranged in at least one line being perpendicular to ~~said the~~ moving ~~direction, direction,~~ said
the transmission intensities and ~~said the~~ reflection intensities being measured by determining
a multitude of sensor values for each sensor cell in fast succession ~~while said as the~~ specific
sheet-like object passes ~~said the~~ sensor cells.

3. (Currently Amended) The method as claimed in claim 2, wherein the sheet-
like ~~characterised in that said sheet-like~~ objects are illuminated with infra-red light.

4. (Currently Amended) The method as claimed in claim 2, further comprising:
~~characterised in that a set of dedicated test spots is determined determining test~~
~~spots for said for the~~ specific sheet-like object, ~~wherein and said the~~ two-dimensional
evaluation for ~~said the~~ specific sheet-like object is ~~solely~~ carried out for only said the set of
test spots.

5. (Currently Amended) The method as claimed in claim 4, ~~wherein~~ characterised
~~in that said the~~ test spots are defined by applying image processing ~~said to the~~ transmission

image and ~~said the~~ reflection image, ~~thereby considering said based on a position, said an~~ angle and known parameters of an object type of ~~said the~~ specific sheet-like object.

6. (Currently Amended) The method as claimed in claim 5, ~~characterised in that~~ ~~said wherein the~~ test spots are ~~determined such that they are~~ positioned outside of an exclusion area of ~~said the~~ specific sheet-like object, ~~said the~~ exclusion area comprising at least one of the following object areas:

a) an area of ~~said the~~ specific sheet-like object ~~with having at least one of~~ a dark print, a foil, a hologram ~~or and~~ a thread,

b) an area within a given maximum distance ~~to from~~ an edge of ~~said the~~ specific object ~~sheet-like object, or and~~

c) an area, ~~particularly a rectangular area,~~ in each corner of ~~said the~~ specific sheet-like object.

7. (Currently Amended) The method as claimed in claim 4, ~~characterised in that~~ ~~said wherein the~~ test spots are grouped in a plurality of overlapping regions of ~~said the~~ specific sheet-like object, the method further comprising:

determining an where ~~first an independent double feed detection result is~~ ~~determined~~ for each ~~region region of the plurality of overlapping regions;~~ and

determining ~~second an overall double feed detection result is determined by~~ combining ~~said the~~ independent double feed detection ~~results~~ result of each region.

8. (Currently Amended) The method as claimed in claim 5, further comprising: ~~characterised in that said specific object is validated in a first step~~ determining an object type of the specific sheet-like object; and

validating the specific sheet-like object,

wherein the two-dimensional evaluation method to detect the double feed is only applied if the specific sheet-like object is validated, and said double feed is detected in a

second step only if said specific object has correctly been validated, where said object type of said specific object is determined during said first step of validating said specific object.

9. (Currently Amended) An apparatus Apparatus for processing one or more types of sheet-like objects, particularly banknotes, having comprising:

a transport path;

a transporter that conveys the transport means for conveying said sheet-like objects along a transport the transport path in a moving direction and direction;

a detector for an optical detection of that optically detects a double feed of said objects the objects, said detector the detector comprising comprising:

an illuminator that illuminates the illumination means for illumination of said sheet-like objects, particularly with infra-red light, objects;

a transmission-type sensor for producing a transmission image of said objects by that measuring measures the transmission intensities of light transmitted through the sampling points of said objects, the sheet-like objects;

a reflection-type sensor for producing a reflection image of said objects by measuring that measures the reflection intensities of light reflected from said objects the sampling points of the sheet-like objects; and

an evaluator that performs a which is built such that a two-dimensional evaluation can be carried out where by forming a first dimension is formed by said from the transmission intensities and a second dimension is formed by said from the reflection intensities, the evaluator being adapted to carry out the steps of determining the location determining locations of said points the sampling points in said two the first and second dimensions, and comparing said comparing the locations with a linear decision boundary.

10. (Currently Amended) ~~The apparatus~~Apparatus as claimed in claim 9, characterised in that ~~said illumination means comprise~~ the illuminator comprising:

a first elongated illumination unit for illumination of a first surface of ~~said the~~ said sheet-like ~~objects-objects~~; and

a second elongated illumination unit for illumination of a second surface of ~~said the~~ sheet-like objects, ~~each illumination unit preferably comprising a multitude of light sources arranged in line.~~

11. (Currently Amended) The apparatus as claimed in claim 10, ~~characterised in that said wherein the~~ transmission-type sensor comprises an array of sensor cells and ~~said cells, the~~ reflection-type sensor comprises an array of sensor cells where ~~said cells, and the~~ elongated illumination units and ~~said the~~ arrays of sensor cells are arranged perpendicular to ~~said the~~ moving direction of ~~said the~~ transport path.

12. (Currently Amended) The apparatus as claimed in claim 11, ~~characterised in that wherein~~ each sensor cell comprises a light sensitive device ~~for measuring said that~~ measures the intensities of light, the detector further comprising:

~~and an~~ optical means device, particularly a rod lens, for directing said that directs the transmitted or reflected light onto ~~said the~~ light sensitive device.

13. (Currently Amended) Apparatus as claimed in claim 11, the detector further comprising:

~~characterised in that said detector comprises exactly one array of sensor cells forming said transmission-type sensor as well as said reflection-type sensor and a controller for that alternately switching said switches the~~ illumination units on and off and alternately ~~measuring said measures the~~ intensities of light transmitted through or reflected from ~~said the~~ sheet-like objects ~~respectively, wherein exactly one array of sensor cells forms the~~ transmission-type sensor and the reflection-type sensor.

14. (Currently Amended) The apparatus as claimed in claim 10, ~~characterised in that it comprises further comprising:~~

~~a validator for a validation of said that determines the validity of the sheet-like objects, said wherein validator and said detector being built such that said validation is carried out before said the validator determines the validity of the sheet-like objects before the detector optical detection optically detects a double feed and such that said optical detection is carried out the detector optically detects a double feed only if said validation of said objects has been carried out correctly the validator validates the sheet-like objects.~~

15. (New) The method as claimed in claim 1, wherein the sheet-like objects are banknotes.

16. (New) The apparatus as claimed in claim 9, wherein the sheet-like objects are banknotes.

17. (New) The method as claimed in claim 6, wherein the area in each corner of the specific sheet-like object is substantially rectangular.

18. (New) The apparatus as claimed in claim 10, wherein each of the first and second elongated illumination units comprises a multitude of light sources arranged in a line.

19. (New) The apparatus as claimed in claim 12, wherein the optical device is a rod lens.